REMARKS

This paper is in response to the Office Action of April 28, 2005, and is timely filed as it is filed using a certificate of mailing under 37 CFR § 1.8 signed on the three-month date of July 28, 2005. In light of the above amendments and the following remarks, applicants respectfully request reconsideration and withdrawal of the rejections.

Claims 1-21 are pending in this patent application, with claims 1, 12 and 19 being independent claims. The examiner has rejected each of claims 1-21. As a result, claims 1-21 are at issue.

35 U.S.C. §112 REJECTIONS

Applicants respectfully traverse the rejection of claims 1-11 as indefinite and the rejection of claim 6 as including subject matter not supported by the specification. Reconsideration and withdrawal of these rejections are respectfully requested in light of the amendments made to claim 1 to eliminate the use of the term "capable of," and to claim 6 to recite that the configuration application is to be run on the computer or the workstation, as is clearly supported by the specification as originally filed. Applicants appreciate the examiner's careful review of these claims and bringing the claim/specification inconsistency to the applicants' attention. In any event, these amendments are not made for patentability purposes, but to clarify the construction of these claims.

35 U.S.C. §103 REJECTIONS

Applicants respectfully traverse the rejections of claims 1-18 as obvious over Leibold (U.S. Patent No. 5,818,736) in view of one or more of Brown et al. (U.S. Patent No. 6,377,859) ("Brown"), what the examiner has characterized as the "Admitted prior art" ("AD"), Bowling (PCT WO 97/45778) ("Bowling") and Santoline et al. (PCT WO 97/38362) ("Santoline"). Applicants respectfully request reconsideration and withdrawal of these rejections.

Each of claims 1-18, as amended, now recites a system or a method that stores, on a single simulation computer, both a configuration application which is capable of being executed on the computer to create control modules for execution by a distributed controller, and a controller application which can be executed on a controller within a distributed process control system to implement the control modules during operation of the distributed

process control system but which can be executed on the simulation computer to simulate the execution of the control modules. Furthermore, as amended, each of claims 1-18 now recites that the configuration application creates at least two modules, wherein one of the modules is for use by a distributed process controller and another of the modules is for use in a different device within the process control system than the distributed process controller (e.g., a field device or another controller) during operation as part of a distributed process control system. The simulation computer then causes execution of the control module and the additional module within the same simulation computer to allow both the design and simulation of the operation of modules within different devices of a distributed process control system on a single computer. Thus, the recited system and method simulates on a single computer the operation of various components within different devices of a distributed process control system as well as simulating communications between these components within the different devices.

In this manner, the system and method of claims 1-18 enable a distributed process control routine that has components that are to be run on and stored in different devices when in use in a distributed process control system to be ***both*** designed (created) and tested on a single computer, e.g., a single processor. Such a combined design and operational testing system is particularly useful in distributed process control systems (in which control routines are generally designed to be located and executed in different process control devices, such as in different controllers and field devices at separate locations in the process plant) because it is sometimes difficult to correctly configure or create the appropriate process control routines and their communication interconnections in the first place.

None of the cited art discloses or suggests that it is possible or even desirable to simulate, on a single computer, the creation and execution of various modules which are ultimately designed to be stored in and used in different devices within a distributed process control system, much less storing a configuration application to create those modules in the same computer. As a result, no combination of this art can create the system and method of claims 1-18.

In particular, while Leibold discloses a simulation device for a distributed process control system, it is clear that the Leibold simulation computer only simulates the logic modules located in or associated with a single controller device, i.e., the process controller 105 of Fig. 1. See, for example, Col. 5, ll. 50-53 and 63-67, and Col. 6, ll. 42-56 of Leibold, which clearly state that, while multiple logic blocks may be simulated, each of the simulated

logic blocks is disposed within or is associated with the same "logic point" i.e., device. Leibold does not disclose or suggest that it is possible or even desirable to have a control system having logic modules distributed within multiple different process control devices, much less a simulation system that simulates the operation of these multiple logic blocks to be executed in different devices by running them on the same simulation computer.

Still further, Leibold does not disclose a system that stores a configuration application that is used to create the logic blocks on the same computer as the simulation computer, as is recited by each of claim 1-18. In fact, Leibold is silent as to how the logic blocks used in the simulation computer Figs. 3A and 3B are created. It can be assumed, however, that these logic blocks may be created using the UOS 125 of Fig. 1, which is a different device than the simulation computer device 205 of Fig. 3A. Thus, Leibold also fails to disclose a simulation system in which a user can both create logic modules to be used in a process control system and test the operation of those modules using the same computer.

Additionally, none of Brown, the AD, Bowling or Santoline provides the missing disclosure, nor has the examiner cited them for such disclosure. In particular, Brown and the AD simply disclose or describe a distributed process control system having a configuration application and different modules (such as control modules) disposed within different devices of the process control system during operation of the process control system. Brown does not disclose the use of a simulation system what-so-ever. While the AD mentions the use of simulation systems, neither Brown nor the AD discloses or suggests that a single computer can be used to simulate different process modules to be used in different devices of a distributed process control system or that a single computer can be used to run a configuration application for use in creating process modules to be run in different devices in as well as a simulation system that simulates the operation of those different process modules. Because none of Leibold, Brown or the AD discloses or suggests that it is possible or desirable place the configuration application, and modules for use in different devices within a process control system in the same simulation computer to simulate the operation of the process control system, no combination of this art produces the invention recited by each of claims 1-18.

Likewise, as noted previously, Santoline discloses a simulation system for a distributed process control system which specifically requires a simulation computer 21 that acts as an interface between (1) process controllers (DPUs 7) that are running actual control routines within the process plant, (2) a plant model run in a different computer 19 and (3)

user interfaces 13 associated with still different computers that enable operator input. Importantly, the simulation computer 21 of Santoline specifically uses the outputs of the DPUs 7 when the DPUs 7 are actually running within the plant to "simulate" the plant operation. The Santoline system does not and cannot simulate the operation of the plant without communicating with the distributed controllers actually running within the plant. As a result, Santoline cannot possibly suggest or provide a motivation for implementing a complete simulation of the distributed control software in a single computer as Santoline specifically requires communications with the distributed process controllers within the plant. Likewise, Santoline does not disclosure or suggest placing a configuration application within the simulation computer.

Additionally, while Bowling discloses a simulation system for a process control system, the Bowling system is specifically limited to logic within a single device, not logic within multiple different devices. In fact, Bowling specifically discloses re-hosting a controller application directly from a single controller within a process plant to the simulation system to simulate the operation of that single controller. Thus, Bowling specifically requires that the simulation only simulate the logic of one device (i.e., one controller) and requires that the control software which is to be used in the simulation comes from the actual process controller within the plant, not from a configuration application within the simulation computer. Thus, to be created, the simulation system of Bowling requires communications between separate devices and does not use a configuration application stored on the same computer as the simulation computer.

As indicated above, the system and method of claims 1-18 not only simulate control module operation once the control software for use in different devices has been created, but also simulate or allow a user to create the modules in the first place so that the user can then immediately test the modules to be run in different devices on the simulation computer to observe their operation, without having to download the controller software to a controller within the process plant and without having to communicate with any other computers or devices. None of the cited art discloses or suggests that it is even possible to provide a combined design and simulation environment in which controller software for a distributed process control system that includes modules to be run in different devices can both be created and tested on a single computer. Still further, because the simulation systems disclosed in the cited art all require communication between different computer devices both to be set up and to be run, none of the cited art provides a motivation or suggestion for

creating a simulation system on a single computer. While it may not be difficult to actually place the separately available configuration application and the controller application within the same computer, it is the inventors of this application who first recognized the need or desirability of doing so within distributed process control systems for training and controller application design purposes. In other words, the only suggestion or reasoning for providing the configuration software on the same computer as the simulation software to simulate both the design and the operation of the process control system comes from the applicants' disclosure, and not from any of the prior art, which does not recognize the need for such a combination. For these reasons, claims 1-18 are non-obvious in view of the cited art.

Applicants respectfully traverse the rejection of claims 19-21 as obvious over Leibold in view of Brown and respectfully request reconsideration and withdrawal of this rejection. Each of claims 19-21 basically recites a system having a controller application which is designed to operate in a first type of a distributed controller but which can also act outside of the distributed controller as part of an interface between a user interface or display and a second and different type of controller (e.g., one using a different communication protocol) that may be, for example, operating within an actual process plant. Thus, these claims recite a "viewing application [] adapted to communicate with the controller application and to use the display to display information sent from the further controller."

The examiner admits that Leibold does not disclose one controller application communicating with another controller application. Still further, while Leibold discloses that the logic blocks within the controller 105 may be hosted on a simulation computer, Leibold does not disclose or suggest that the logic blocks, when run within the simulation computer, may somehow communicate with a further or different controller or display information about that different controller to a user via a user interface. Thus, Leibold does not recognize or suggest that the logic to be run in simulation computer to simulate the operation of the controller 105 of Fig. 1 can also be used to communicate with a different controller, such as one actually running within the plant, to act as a viewing interface application for the different controller.

Contrary to the examiner's contention, Brown fails to provide the missing disclosure of Leibold. The only portion of Brown cited by the examiner is that at Col. 2, ll. 1-25, which basically states that there are some communication protocols, like the FOUNDATION™ Fieldbus protocol that, when implemented within an operating distributed process control environment, enables devices (like field devices) manufactured by different manufacturers to

interoperate and communicate with one another via a standard bus. Claims 19-21 now clearly recite, however, that the different controllers use different communication protocols. Because the system of Brown merely discloses different devices that communicate together using the same communication protocol, Brown cannot describe or suggest communications between different types of controllers (i.e., ones using different communication protocols), much less placing controller software for one type of controller in a simulation or further computer and then using that computer as part of an interface to another and different type of controller. As a result, no combination of Leibold and Brown produces the invention recited by claims 19-21. Still further, neither of Leibold nor Brown discloses or suggests using a first controller application to interface with a second and different type of controller to enable a user to view information from the second controller using a viewing application designed for the first controller application, as is provided by the system recited by claims 19-21. As a result, no combination of this art can produce the recited invention.

For these reasons, there is no motivation to combine Leibold and Brown nor would any combination of this art teach or suggest using one type of controller application as part of an interface to a second and different type of controller, as recited by claims 19-21. As a result, these claims are submitted to be patentable over the cited art. Applicants therefore respectfully request allowance of claims 19-21.

Conclusion

For the foregoing reasons, applicants respectfully request reconsideration and allowance of claims 1-21. Although applicants believe that no fees are due in this case, the Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 13-2855 of Marshall, Gerstein & Borun LLP. A copy of this paper is enclosed herewith.

Of course, if there are matters that can be discussed by telephone to further the prosecution of this application, applicants respectfully request that the examiner call its attorney at the number listed below.

Respectfully submitted,

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